

Appl. No. 09/935,896

Amdt. dated December 15, 2006

Reply to Final Office Action of 10/30/06

The listing of claims will replace all prior versions, and listing, of claims in the application:

Listing of Claims:

1. (Currently Amended) A method for repairing defects in an article, the article comprising a substrate and an existing coating on a surface of the substrate, the article including a first plurality of cooling holes extending from the substrate and the existing coating and having a predetermined air flow requirement, the plurality of cooling holes having a diffuser passage ~~an outer shaped portion~~ and an inner metering portion, the method comprising:
 - removing the existing coating;
 - recoating the surface of the article with a nonoriginal coating;
 - providing an electrode for electrical discharge machining; wherein the electrode having only a diffuser shaped portion ~~with a preselected shape~~;
 - receiving the electrode in the diffuser passage ~~outer shaped portion~~ of the plurality of cooling holes; and
 - removing the nonoriginal coating from only the diffuser passage ~~outer shaped portion~~ using electrical discharge machining such that the diffuser passage ~~outer shaped portion~~ meets the predetermined air flow requirement.
2. (Previously Presented) The method of claim 1 further comprising:
 - propelling a stream of abrasive particles into the inner metering portion of the plurality of cooling holes to remove the nonoriginal coating from the inner metering portions of the plurality of cooling holes.

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3. (Previously Presented) The method of claim 1, wherein the article further includes a second plurality of cooling holes having a predetermined air flow requirement, the method further comprising:

filling the second plurality of cooling holes with a repair material prior to the recoating step; and

remanufacturing the cooling holes filled with the repair material to meet the predetermined air flow requirement of the second plurality of cooling holes using electrical discharge machining-

4. (Original) The method of claim 3 wherein the first and second plurality of cooling holes are diffusion holes.

5. (Original) The method of claim 1 wherein the existing coating is a thermal barrier coating system comprising a metallic bond coat and a ceramic thermal barrier coating on top of the bond coat.

6. (Original) The method of claim 1, wherein the substrate is an alloy selected from the group consisting of cobalt base alloys, nickel base alloys and iron base alloys.

7. (Original) The method of claim 6, wherein the alloy is a nickel or cobalt base superalloy.

8. (Original) The method of claim 1 wherein the article is a gas turbine vane.

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9. (New) A method for repairing defects in an article, the article comprising a substrate and an existing coating on a surface of the substrate, the article including a first plurality of cooling holes extending from the substrate and the existing coating and having a predetermined air flow requirement, the plurality of cooling holes having an outer shaped portion and an inner metering portion, the method comprising:

removing the existing coating;

recoating the surface of the article with a nonoriginal coating;

providing an electrode for electrical discharge machining; wherein the electrode having only a shaped portion with a preselected shape;

receiving the electrode in the outer shaped portion of the plurality of cooling holes;

removing the nonoriginal coating from the outer shaped portion using electrical discharge machining such that the outer shaped portion meets the predetermined air flow requirement; and

propelling a stream of abrasive particles into the inner metering portion of the plurality of cooling holes to remove the nonoriginal coating from the inner metering portions of the plurality of cooling holes.